Received: 19 June 2022 | Revised: 19 November 2022 | Accepted: 6 January 2023

DOI: 10.1002/hsr2.1063

ORIGINAL RESEARCH

Health Science Reports Open Access WILEY

Validity and reliability of the Persian version of the Short-Form Adolescent Health Promotion scale: Methodological study

Naeimeh Sarkhani[1] | Shahzad Pashaeypoor[2] | Reza Negarandeh[1] | Nazli Ghafouryan Gomish Bashi[3] | Mohammad Ehsan Heshmatian[4]

[1]School of Nursing and Midwifery, Nursing and Midwifery Care Research Center, Tehran University of Medical Sciences, Tehran, Iran

[2]Department of Community Health and Geriatric Nursing, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran

[3]Australian E-Health Research Center, Commonwealth Scientific and Industrial Research Organisation, Brisbane, Queensland, Australia

[4]Research Center for Cognitive & Behavioral Sciences in Police, Directorate of Health, Rescue & Treatment, Police Headquarter, Tehran, Iran

Correspondence

Shahzad Pashaeypoor and Reza Negarandeh, School of Nursing and Midwifery, Nursing and Midwifery Care Research Center, Tehran University of Medical Sciences, Nosrat St., Tohid Sq., Tehran, Postal Code: 1419733171, Iran.

Email: sh-pashaeipour@tums.ac.ir and rnegarandeh@tums.ac.ir

Funding information

Tehran University of Medical Sciences and Health Services, Grant/Award Number: 98-3-160-45198

Abstract

Background and Aim: Assessing health promotion among adolescents is vital to identify healthy and unhealthy behaviors and to evaluate health promotion interventions. This study aimed to determine the validity and reliability of the Persian version of the Short-Form Adolescent Health Promotion scale.

Methods: Three hundred and twenty-seven adolescents were recruited through a multistage sampling method in this methodological study. The original version of the Adolescent Health Promotion scale was translated from English to Persian using the Backward–Forward translation protocol. Then, the scale's validity and reliability, including the face, content, construct validity, and reliability indices, were evaluated. The statistical analysis was performed using SPSS software version 24.

Results: The mean CVI and CVR were 0.99. The exploratory factor analysis revealed four factors covering 42.57% of the total variance. The factor loading order of the items did not exactly correspond to the order obtained in the English version of the scale's validity and reliability analysis. The obtained factors called included: life appreciation, stress management, nutrition, and health responsibility. In the current study, both Cronbach's *α* and the intraclass correlation coefficient were calculated at 0.84 and 0.99.

Conclusion: The Persian version of the Adolescent Health Promotion scale developed in the present study is acceptable for the validity of the content, face, and reliability. However, the construct validity of this scale should be checked in other samples.

KEYWORDS

adolescents, health promotion, reliability, validity

1 | INTRODUCTION

According to World Health Organization (WHO) "health promotion is defined as empowering people to increase control and improve their health."[1] Hence, one of the main goals for adolescents in the "Healthy People 2020" program is to support adolescents' health.[2]

Health patterns have undergone significant positive and negative changes, especially among adolescents, over the past years because mortality and morbidity causes have shifted from infectious agents to behavioral factors.[3] These changes expose adolescents to the development of high-risk health behaviors whose effects may last for several years and even until the end of one's life.[4,5] According to reports, 1.1 million adolescents die each year due to many health-promoting lifestyle-related problems such as being overweight, alcohol or tobacco use, physical inactivity, malnutrition, cancer, and cardiovascular disease. Also, previous research investigated the prevalence of risky health behaviors, such as smoking, drug abuse, alcohol consumption, and physical inactivity, among adolescents in Iran.[6-8] A study on a sample of 3207 Iranian adolescents found that the rate of overweight and obesity are 11/3% and 10.2%, respectively. Furthermore, 57/2% of participants had a low physical activity of fewer than 30 min/day.[7]

Adolescence is significant for developing healthy behaviors, helping determine healthy lifestyle habits in adulthood.[9] Modifying health-related risk factors at the early stages can ensure healthy adulthood.[7] In particular, evidence suggests that performing health-promoting behaviors (HPBs) can reduce the risk of diseases and improve lifestyle.[6,10,11] Therefore, understanding and evaluating HPBs among adolescents is essential for healthy growth and development.[12]

It is essential to develop valid and reliable scales to measure health promotion among adolescents to appraise and improve related interventions to promote a healthy lifestyle in adolescents. Numerous efforts have been made to design a scale to measure health promotion, especially in adolescents, such as the Health Promoting Lifestyle Profile (HPLP),[13] the Adolescent Lifestyle Questionnaire,[14] the 40-item Adolescent Health Promotion (AHP-40),[15] and a Short-Form version of the AHP (AHP-SF).[16] Among these scales, the AHP-SF scale has been recently developed by Chen et al.[16] based on modifying the items in AHP-40. The AHP-SF includes a smaller number of items; besides, it is simpler and more practical. Chen et al.[16] have also introduced AHP-SF as a scale with appropriate validity and reliability to assess adolescents' health promotion in different situations through self-assessment and evaluation by healthcare providers.

Considering the lack of a short and convenient scale in Persian to measure the health promotion of Iranian adolescents and time constraints, healthcare providers have not provided adequate advice regarding adolescents' health promotion. On the other hand, the related literature has emphasized the importance of providing sufficient information about the validity and reliability of the scales in case of adopting them in different cultures.[17] Therefore, to provide a standard and reliable scale, the validity and reliability of the Persian version of the AHP-SF scale were investigated in the current study.

2 | METHOD

The present study was methodological research. After translating the scale into Persian, the validity of the Persian version of the AHP-SF scale was evaluated by examining the content, face, and construct validity, and its reliability was assessed in terms of internal consistency and stability.

2.1 | Population and sampling

The study population comprised all middle-school adolescent students in the southern suburbs of Tehran, Iran. The south of Tehran was chosen to study because of its diverse texture. They can consider as a representative sample for the whole city. The Tehran University of Medical Sciences also covers the southern regions. Purposive sampling was used for face and content validity and reliability. While multistage sampling was used for construct validity. Initially, two suburbs were randomly selected from all the southern areas in Tehran, and then two schools from two suburbs were randomly selected. Then, the required samples were selected from these schools by simple random sampling. The inclusion criteria included: adolescents aged 13–15 years and willing to consent to participate in the study. The exclusion criteria were not diagnosed with severe physical, intellectual, or learning disorders. The sample size of 300 individuals was considered appropriate for exploratory factor analysis (EFA) studies. However, it is recommended to select more than 500 samples if possible.[18] Considering a 15% nonresponse rate, 350 adolescents were selected and invited to study. Among them, 327 adolescents met the inclusion criteria, and both adolescents and their parents were asked to complete a written consent form and the study scales.

2.2 | Data collection process

The study was conducted during the coronavirus disease 2019 (COVID-19) pandemic lockdown from June to July 2020. However, in this period, the students were allowed to attend the final examination with a presence in the school. Thus, the questionnaires were completed in a classroom by self-administration with paper and pen. It took approximately 15 min to complete the scale.

2.3 | Data collection scales

The demographic characteristic form and short form of the AHP-SF scale were used for data gathering. The demographic characteristics form consists of 12 questions to collect information about the participants' demographic characteristics (gender, parents' educational level, parent's employment status, birth rank, family income, family size, Living arrangement, age, height, and weight).

2.3.1 | AHP-SF

The preliminary version of this scale with 40 items was validated by Chen et al.[15] in Taiwan in 2003; the developers then decided to remove 19 items based on the results of the confirmatory factor analysis (CFA). Finally, they proposed a valid and reliable 21-item scale (AHP-SF) to assess AHP. This scale helps evaluate the promotion of health among adolescents within six dimensions of nutrition (3 items), exercise (3 items), health responsibility (4 items), stress management (3 items), social support (4 items), and life appreciation (4 items). The scale's reliability has been confirmed with an internal consistency index with a Cronbach's α of 0.905 and McDonald's ω of 0.904. The questions were based on a 5-point Likert scale (always, sometimes, usually, rarely, and never), with "never" as the lowest score (1) and "always" as the highest score (5). The total score is measured according to the mean scores obtained from the subscales and ranges between 21 and 105. Higher scores on this scale indicate better health promotion behaviors, and lower scores indicate an undesirable status of health promotion behaviors.[16]

2.4 | Translation

2.4.1 | Forward translation

At first, the original version was translated from English to Persian concurrently by two independent professional translators. Each translator produced a written report. Furthermore, the translators made further comments to determine any challenging phrases or uncertainties. Translators discussed any discrepancies, and a consensus was made.

2.4.2 | Back translation

Following that, two independent translators were asked to translate the last version of the scale from Persian to English without access to the original version and then to produce a written report. Individual reports were compared, and any differences were resolved by discussion.

Following examining the scale for cultural adaptation and applying the necessary modifications, the Persian version of the AHP-SF scale was developed.

2.5 | Expert committee

Tsang et al.[19] suggested that an expert committee review the scale's prefinal version. In the current study, seven experts (including two community health nursing instructors, four translators, and one methodologist) were asked to examine the scale. Following providing the original and translated versions of the scale, the experts were asked to score it between 1 and 4 (1 = needs much revision, 2 = needs a slight revision, 3 = appropriate, and 4 = very appropriate). Then, an independent researcher finalized the scale based on the expert's feedback.

2.6 | Validity

2.6.1 | Content validity

Content validity was evaluated both quantitatively and qualitatively by a panel of experts consisting of eight academic nurses aged 30–50 years from different fields, including community health nursing, psychiatric nursing, and pediatric nursing. The panel examined content validity based on the items' content, the scale's overall structure, and the need to remove or add items. Furthermore, the panel provided valuable feedback about the appropriate position of the items, the use of words, the compliance with the grammatical rules, and the proper scoring of the items. Modifications were made based on the feedback received from an expert panel.

Quantitative content validity was assessed using the content validity ratio (CVR) and content validity index (CVI) proposed by Polit and Beck.[20] The panel evaluated the items' necessity by calculating CVR.[21] Calculating the CVR index can lead to selecting the most important and the best content.[22] The CVI was also evaluated to determine if the items were best designed to measure the constructs. It should be noted that CVI values higher than 0.79 are valid, CVI values between 0.70 and 0.79 require further modification, and CVI values equal to and lower than 0.70 are unacceptable and must be removed.[20] The panel evaluated the items in terms of relevance, simplicity, and clarity on a 4-point Likert scale.

2.6.2 | Face validity

Face validity was measured using both quantitative and qualitative approaches. The quantitative face validity was conducted with a 5-point Likert scale (from quite important (5) to unimportant (1)) on the items on the scale. The scale was distributed among a panel of experts (the panel of experts in the content validity). Then, the number of individuals who selected the scores 4 or 5 for each item, the total scores assigned to each item, and the mean scores of each item were determined. Each item's impact score was calculated using the following formula: impact = frequency × importance. This study considers an impact score of 1.5 or greater acceptable. The expert panel and 30 adolescents contributed to qualitative face validity. Participants were asked to assess the items' clarity, difficulty level, and the possibility of misinterpretation of the words and phrases.

2.6.3 | Construct validity

To identify possible cultural differences in the adaptation of the scale, Orçan suggested performing an EFA.[23] Hence, the construct validity

was evaluated using EFA to identify the dimensions of the scale in the present study. Factor analysis was appropriated by reporting the Kaiser–Mayer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. Bartlett's test of sphericity was used to determine whether the obtained correlation matrix was significantly different from zero. In other words, Bartlett's test of sphericity is commonly conducted to justify the need for factor analysis. Moreover, the sampling adequacy value was evaluated using the KMO test. Eigenvalue was utilized to determine the number of scale factors. A decision about the number of factors to retain was based initially on eigenvalue, keeping any factor with an eigenvalue of 1.0 or higher. Also, Promax rotation was applied for simplification and interpretation of the factor construct. Data analysis was performed in SPSS software version 24.

2.7 | Reliability

Reliability is considered an essential criterion for assessing the quality of a scale as it indicates the accuracy and dependability of the information obtained by that scale. Hence, to evaluate the scale's stability, the test–retest method was used on a sample of 30 adolescents within a 2-week time interval. SPSS statistical package version 24 was used to calculate the intraclass correlation (ICC) based on a single-rating, absolute-agreement, and two-way mixed-effects model. Furthermore, the results from 327 adolescents were used to assess internal consistency measured by Cronbach's *a* coefficient.

2.8 | Statistical analysis

Data analysis mean (SD), frequency report (percentage), and variance were used to describe the demographic characteristics of the adolescents. Also, the construct validity of the scale was also assessed by EFA. Factor analysis was appropriated by reporting the KMO and Bartlett's test of sphericity. The scale's reliability was measured by Cronbach's *a* coefficient and ICC coefficients. These analyses were performed in SPSS software version 24. Data imputation was done by replacing missing data with a mean value for each column.

2.9 | Ethics committee approval

The permission to use the original scale was obtained from the author via e-mail. This study has the approval of the Ethics Committee of Tehran University of Medical Sciences, Tehran, Iran. Necessary ethical and governance approvals were obtained from relevant authorities. Participants and their parents were informed about their right to withdraw from the study at any time if they changed their minds. They also ensured that their data remained anonymous and unidentifiable. Adolescent and their parents were asked to sign the consent forms.

3 | RESULTS

Table 1 presents the demographic characteristics of adolescents who participated in the study. Of 336 adolescents, 9 did not complete the main study scale, leading to a final data set of 327. Also, Table 2 presents the frequency of adolescents' responses to the scale's items and their respective mean and variance.

3.1 | Validity analysis

3.1.1 | Content validity

The scale content validity was assessed using qualitative methods through feedback from the panel of experts, and required modifications were applied accordingly. As Lawshe's table shows, items with a CVR coefficient value greater than 0.99 were accepted (21 items). In addition, CVI was evaluated for 21 items, and the content validity index for the AHP-SF scale was calculated (CVI = 0.99).

3.1.2 | Face validity

The qualitative face validity was used to indicate the level of difficulty, the degree of relevance, the ambiguity of the scale, as well as the 5-point Likert scale. In the current study, the expert panel and adolescents approved all items. The quantitative face validity was assessed by measuring the impact score for each item, and since the score for all 21 items was higher than 1.5, all items were considered for the next steps.

3.1.3 | Construct validity

EFA was performed on the data. KMO test indicated sample adequacy for EFA (KMO = 0.81). Based on Bartlett's test of sphericity with χ^2 (210) = 1168.86, the correlations between the items are large enough to perform EFA with orthogonal rotation. The results of EFA showed six factors with eigenvalues of greater than 1. In EFA, two factors were omitted due to an insufficient number of items. These factors included items 4, 6, 16, and 17. Finally, four factors (factor 1: life appreciation; factor 2: stress management; factor 3: nutrition; and factor 4: health responsibility) explained 42.57 of the total variance. The scree plot also confirmed the four extracted factors (Figure 1). Therefore, the factor analysis results indicated acceptable construct validity for the AHP-SF scale (Table 3).

3.2 | Reliability analysis

ICC estimates were calculated at 0.99 for the whole scale. (Table 4). Cronbach's *a* coefficient was calculated between 0.64 and 0.75 for

TABLE 1 Demographic characteristics of the adolescents (n = 327)

Characteristics	Frequency	
	N	%
Gender		
Girl	208	63.6
Boy	119	36.4
Father's educational level		
Illiterate	42	12.8
Elementary	132	40.4
Diploma	120	36.7
University degree	33	10.1
Mother's educational level		
Illiterate	74	22.6
Elementary	101	30.9
Diploma	113	34.6
University degree	39	11.9
Father's employment status		
Employed	274	83.8
Unemployed	34	10.4
Retired	19	5.8
Mother's employment status		
Employed	48	14.7
Housewife	273	83.5
Retired	6	1.8
Birth rank		
First	178	54.4
Second	87	26.6
Third or more	62	19
Family monthly income		
Inadequate	46	14.1
Relatively adequate	114	34.9
Adequate	167	51.1
Family size		
Less than 4	103	31.5
4 or more	224	68.5
Living arrangement		
With both parents	311	95.1
With father	6	1.8
With mother	10	3.1
Age, mean (SD)	14.03 (0.825)	
Weight, mean (SD)	56.30 (11.55)	
Height, mean (SD)	162.23 (9.007)	

the scale subscales. Cronbach's α coefficient for the whole scale was reported as 0.84.

4 | DISCUSSION

This study aimed to investigate the validity and reliability of the Persian version of the AHP-SF scale. All items remained on the scale according to the content validity and face validity results with quantitative and qualitative methods. Thus, the AHP-SF scale's construct validity was examined. Although it is crucial to measure content validity and face validity and is considered a psychoanalytic step,[24] it is not calculated in the original version.

The results of the EFA indicated four factors on the scale. Life appreciation, stress management, nutrition, and health responsibility were factors. Chen et al. used CFA for assessing construct validity, which supports the six-factor structure, including nutrition, exercise, health responsibility, stress management, social support, and life appreciation. Compared to the original scale, the Persian version differed in factor loading. Researchers have suggested varying numbers of items per factor ranging from three to five for representing each factor.[25] Therefore, when fewer than three items are loaded in a factor, it is better to delete that factor. Two factors (factors 5 and 6) identified in the original version were omitted due to an insufficient number of items. Among them, only three dimensions of stress management, nutrition, and health responsibility are compatible with the dimensions proposed by the HPLP.

The HPLP scale is based on Pender's health promotion model to determine the extent to which people perform HPBs in six dimensions: nutrition, physical activity, health responsibility, stress management, and interpersonal It measures relationships and spiritual growth.[13] One of the models that have been widely considered in the field of health promotion is Pender's health promotion model. Pender's model did not include the appreciation of the life dimension, but plenty of evidence highlights the relationship between life appreciation and health outcomes.[2,26,27] According to Pender, "Health-promoting behavior is the endpoint or action-outcome directed towards attaining a positive health outcome such as optimal well-being, personal fulfillment, and productive living."[13] Therefore, the appreciation of life can be considered an HPB. Also, the HPLP scale developed in the West evaluates 48 HPBs, while the AHP-SF scale designed in the east consists of fewer items and subscales. The HPLP scale is not age-specific, while the AHP-SF scale is designed specifically for adolescents.[13]

Cronbach's α coefficient was calculated to assess the scale's internal consistency, and the obtained coefficient was reported as 0.84. Moreover, Cronbach's α coefficient was reported between 0.64 and 0.75 for its subscales. According to Polit and Yang, Cronbach's α coefficient is primarily influenced by the number of items on the scale. The small number of items in each dimension may reduce alpha values.[28] Hence, the internal consistency of the final version of the scale showed acceptable and desirable internal consistency. Also, the ICC value was

TABLE 2 Frequency of the adolescents' responses to the scale's items and their respective mean and variance ($n = 327$)

#	Items	Participants' responses, N (%)					Mean	Variance
		Never	Rarely	Usually	Some times	Always		
1	I prefer low-fat foods.	69 (21.1)	50 (15.3)	81 (24.8)	95 (29.1)	32 (9.8)	2.91	1.67
2	I prefer foods with fiber (e.g., fruits and vegetables).	33 (10.1)	64 (19.6)	65 (19.9)	91 (27.8)	74 (22.6)	3.33	1.67
3	My meals include five nutritional groups (e.g., bread, meat, milk, fruit, and vegetable).	12 (3.7)	56 (17.1)	82 (25.1)	83 (25.4)	94 (28.7)	3.58	1.38
4	I talk to others and share my feelings.	30 (9.2)	71 (21.7)	74 (22.6)	86 (26.3)	66 (20.2)	3.27	1.59
5	I care about others.	10 (3.1)	36 (11)	69 (21.1)	74 (22.6)	138 (42.2)	3.90	1.34
6	I speak to others about my concerns.	38 (11.6)	68 (20.8)	64 (19.6)	92 (28.1)	65 (19.9)	3.24	1.69
7	I try to build good relationships with others.	13 (4)	24(7.3)	59 (18)	69 (21.1)	162 (49.5)	4.05	1.32
8	I try to observe the nutrition facts label while buying stuff.	51 (15.6)	74 (22.6)	50 (15.3)	71 (21.7)	81 (24.8)	3.17	2.03
9	I check my weight.	39 (11.9)	54 (16.5)	68 (20.8)	83 (25.4)	83 (25.4)	3.36	1.78
10	I consult with a physician/nurse about my health concerns.	73 (22.3)	56 (17.1)	62 (19)	69 (21.1)	67 (20.5)	3	2.10
11	I try to check my health conditions at least once a month.	41 (12.5)	72 (22)	86 (26.3)	71 (21.7)	57 (17.4)	3.09	1.63
12	I have positive thoughts.	15 (4.6)	52 (15.9)	75 (22.9)	83 (25.4)	102 (31.2)	3.63	1.45
13	I try to amend my weaknesses.	13 (4)	39 (11.9)	65 (19.9)	77 (23.5)	133 (40.7)	3.85	1.42
14	I try to get to know what is important to me.	12 (3.7)	27 (8.3)	51 (15.6)	67 (20.5)	170 (52)	4.09	1.33
15	I try to have good feelings; I also consider every day attractive yet challenging.	16 (4.9)	50 (15.3)	58 (17.7)	86 (26.3)	117 (35.8)	3.73	1.51
16	I exercise regularly three times a week for 30 min.	54 (16.5)	64 (19.6)	73 (22.3)	77 (23.5)	59 (18)	3.07	1.81
17	I warm up before doing exercises.	32 (9.8)	61 (18.7)	74 (22.6)	61 (18.7)	99 (30.3)	3.41	1.81
18	I try not to hunch while standing or sitting.	28 (8.6)	53 (16.2)	69 (21.1)	101 (30.9)	76 (23.2)	3.44	1.55
19	I try to determine the stressors.	26 (8)	45 (13.8)	87 (26.6)	92 (28.1)	77 (23.5)	3.46	1.47
20	I make plans and then prioritize my ideas.	38 (11.6)	59 (18)	71 (21.7)	78 (23.9)	81 (24.8)	3.32	1.77
21	I try to keep calm even in difficulties.	54 (16.5)	61 (18.7)	63 (19.3)	86 (26.3)	63 (19.3)	31.3	1.86

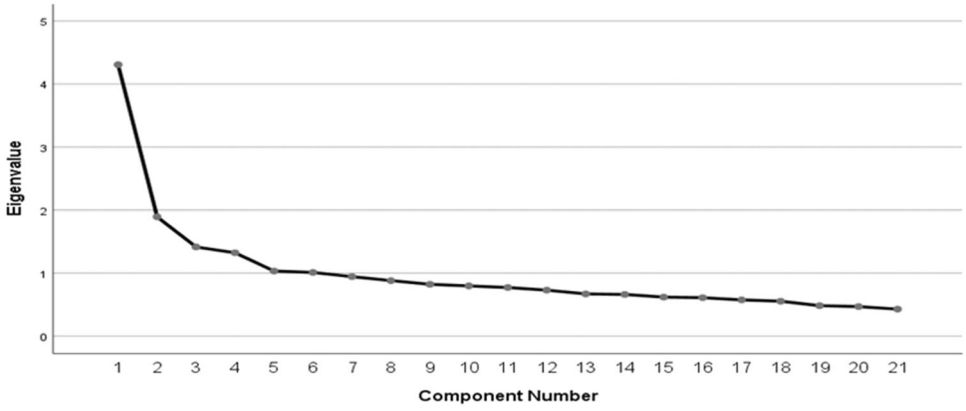

FIGURE 1 Scree plot for the classified factors through exploratory factor analysis of the Persian version of the AHP-SF scale. AHP-SF, Short-Form version of the AHP.

reported as 0.99 in the present study, and it indicates the excellent reliability of the AHP-SF scale. In contrast, the reliability evaluation of the original version only used internal reliability by calculating McDonald's ω and Cronbach's α.

While the AHP-40 has been translated and psychometrically tested in Persian, Chinese, Hindi, and Spanish languages,[29–32] the AHP-SF has not been translated into other languages yet. Aubi et al.[29] translated the AHP-40 scale into Persian and measured its validity and reliability.

TABLE 3 Results of exploratory factor analysis of the Persian version of the AHP-SF scale ($n = 327$)

Dimensions	Items	Item content	% of variance	Factor loading					
				1	2	3	4	5	6
Factor 1	5	I care about others.	20.50	0.724					
	7	I try to build good relationships with others.		0.813					
	13	I try to amend my weaknesses.		0.546					
	14	I try to get to know what is important to me.		0.626					
Factor 2	10	I consult with a physician/nurse about my health concerns.	9.02		0.546				
	12	I have positive thoughts.			0.539				
	15	I try to have good feelings; I also consider every day attractive yet challenging.			0.398				
	19	I try to determine the stressors.			0.670				
	20	I make plans and then prioritize my ideas.			0.464				
	21	I try to keep calm even in difficulties.			0.738				
Factor 3	1	I prefer low-fat foods.	6.74			0.665			
	2	I prefer foods with fiber (e.g., fruits and vegetables).				0.614			
	3	My meals include five nutritional groups (e.g., bread, meat, milk, fruit, and vegetable).				0.742			
Factor 4	8	I try to observe the nutrition facts label while buying stuff.	6.30				0.513		
	9	I check my weight.					0.527		
	11	I try to check my health conditions at least once a month.					0.804		
	18	I try not to hunch while standing or sitting.					0.450		
Factor 5	16	I exercise regularly three times a week for 30 min.	4.92					0.740	
	17	I warm up before doing exercises.						0.710	
Factor 6	4	I talk to others and share my feelings.	4.81						0.808
	6	I speak to others about my concerns.							0.822

TABLE 4 Cronbach's *a* coefficient of the Persian version for the AHP-SF scale ($n = 30$)

Dimensions	Items	Reliability (Chronbach's *a*)
Life appreciation	4	0.74
Stress management	6	0.75
Nutrition	3	0.70
Health responsibility	4	0.64
Adolescent Health Promotion	17	0.84

It shows it is a valid and reliable tool for measuring the level of health promotion of adolescents, young people, and especially medical students.

Based on the study findings, it can be asserted that the AHP-SF scale is a reliable, repeatable, and adequately stable scale that is considered trustworthy. In addition to its high reliability, the AHP-SF scale is multidimensional and short. Besides, this scale is specifically developed to assess health promotion among adolescents. Furthermore, the AHP-SF is easy to implement by primary healthcare providers, including school and community health nurses. It may be helpful in the examination of the effectiveness of interventional programs in improving adolescents' health.

The present study has some limitations. For instance, criterion validity was not evaluated in this study; thus, the researchers recommend assessing this type of validity in future studies. Because of practical restrictions imposed by the educational authorities, only adolescents aged between 13 and 15 years were selected. This issue may affect the generalizability of the findings. Also, this study was conducted during the COVID-19 epidemic; it is recommended that the study be repeated after the COVID-19 epidemic.

5 | CONCLUSION

The Persian version of the AHP scale provided in the present study is acceptable concerning the content, face validity, and reliability. However, based on the total variance, the construct validity of this scale needs to be examined in other samples. The findings of the present study are significant because adolescents make up the largest age group in our country. Therefore, considering the lack of a short

and convenient scale in Persian, the Persian version of the AHP-SF scale could help measure the health promotion of Iranian adolescents. Since the Persian version of the AHP-SF is short and convenient, school health nurses and community health workers can use this scale to assess adolescents' health and the areas that need intervention. Therefore, the scale could provide opportunities for interventions to promote adolescents' healthy behaviors.

AUTHOR CONTRIBUTIONS

Naeimeh Sarkhani: Data curation; investigation; project administration; writing – original draft; writing – review and editing. **Shahzad Pashaeypoor**: Conceptualization; project administration; supervision; writing – review and editing. **Reza Negarandeh**: Formal analysis; investigation; methodology; software; supervision; validation; writing – review and editing. **Nazli Ghafouryan Gomish Bashi**: Data curation; methodology; validation; writing – review and editing. **Mohammad Ehsan Heshmatian**: Data curation; writing – original draft; writing – review and editing.

ACKNOWLEDGMENTS

This study was approved by the Nursing and Midwifery Care Research Center of Tehran University of Medical Sciences, Tehran, Iran (code: 98-3-160-45198) and was financially supported by the Tehran University of Medical Sciences. We would like to thank all participants who participated in the study, the authorities of the study setting who provided permission for conducting the study, and Dr. Chen for permission to use the AHP-SF and for providing the questionnaire in English. All authors have read and approved the final version of the manuscript had full access to all of the data in this study and takes complete responsibility for the integrity of the data and the accuracy of the data analysis. This study was approved by the Nursing and Midwifery Care Research Center of Tehran University of Medical Sciences, Tehran, Iran (code: 98-3-160-45198) and was financially supported by the Tehran University of Medical Sciences.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the first author, Naeimeh Sarkhani, upon reasonable request.

ETHICS STATEMENT

The study was evaluated and approved by the Research Ethics Committees of the School of Medicine-Tehran University of Medical Sciences (Ethical code: IR.TUMS.FNM.REC.1398.215).

TRANSPARENCY STATEMENT

The lead authors Shahzad Pashaeypoor and Reza Negarandeh affirm that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

ORCID

Naeimeh Sarkhani http://orcid.org/0000-0002-8526-8895
Shahzad Pashaeypoor http://orcid.org/0000-0002-2012-3783
Reza Negarandeh https://orcid.org/0000-0002-7597-5094
Nazli Ghafouryan Gomish Bashi http://orcid.org/0000-0002-4243-2771
Mohammad Ehsan Heshmatian http://orcid.org/0000-0002-0835-4925

REFERENCES

1. World Health Organization (WHO). *Adolescent Health*. WHO; 2017. https://www.who.int/health-topics/adolescent-health#tab=tab_2
2. Office of Disease Prevention And Health Promotion (ODPHP). *Topics & Objectives. Adolescent Health*. ODPHP; 2017. https://www.healthypeople.gov/2020/topics-objectives/topic/Adolescent-Health
3. Aceves-Martins M, Aleman-Diaz AY, Giralt M, Solà R. Involving young people in health promotion, research and policy-making: practical recommendations. *Int J Qual Health Care*. 2019;31(2):147-153. doi:10.1093/intqhc/mzy113
4. Long KQ, Ngoc-Anh HT, Hong Phuong N, et al. Clustering lifestyle risk behaviors among Vietnamese adolescents and roles of school: a Bayesian Multilevel Analysis of Global School-Based Student Health Survey 2019. *Lancet Reg Health West Pac*. 2021;15:100225. doi:10.1016/j.lanwpc.2021.100225
5. Xiao Y, Romanelli M, Lindsey MA. A latent class analysis of health lifestyles and suicidal behaviors among US adolescents. *J Affect Disord*. 2019;255:116-126. doi:10.1016/j.jad.2019.05.031
6. Sarkhani N, Negarandeh R, Pashaeypoor S. The effects of face-to-face education for student health ambassadors on the health-promoting lifestyle of adolescent female students: a randomized controlled trial. *J Public Health*. 2021;30(1):1-7. doi:10.1007/s10389-020-01439-0
7. Shayan-Moghadam R, Heidari-Beni M, Riahi R, et al. Assessment of lifestyle and eating habits among a nationally representative sample of Iranian adolescent girls: the CASPIAN-V study. *Arch Iran Med*. 2020;23(8):522-529. doi:10.34172/aim.2020.54
8. Zareiyan A. Healthy or unhealthy lifestyle: a thematic analysis of Iranian male adolescents' perspectives. *Iran J Nurs Midwifery Res*. 2017;22(1):1. doi:10.4103/ijnmr.IJNMR_157_15
9. Nies MA, McEwen M. *Community/Public Health Nursing-E-Book: Promoting the Health of Populations*. Elsevier Health Sciences; 2018.
10. Abdollahi Z, Sayyari AA, Olang B, et al. Effect of educational intervention on healthy lifestyle in Iranian children and adolescents: the IRAN-Ending Childhood Obesity (IRAN-ECHO) program. *J Nutr Sci Diet*. 2019;5(1):31-39. doi:10.18502/jnsd.v5i1.5234
11. Wu XY, Han LH, Zhang JH, Luo S, Hu JW, Sun K. The influence of physical activity, sedentary behavior on health-related quality of life among the general population of children and adolescents: a systematic review. *PLoS One*. 2017;12(11):e0187668. doi:10.1371/journal.pone.0187668
12. Stanhope M, Lancaster J. *Public Health Nursing e-book: Population-Centered Health Care in the Community*. Elsevier Health Sciences; 2019.
13. Walker SN, Sechrist KR, Pender NJ. The health-promoting lifestyle profile: development and psychometric characteristics. *Nurs Res*. 1987;36:76-81. doi:10.1097/00006199-198703000-00002
14. Gillis AJ. The Adolescent Lifestyle Questionnaire: development and psychometric testing. *Can J Nurs Res Arch*. 1997;29(1):29-46.
15. Chen MY, Wang EK, Yang RJ, Liou YM. Adolescent Health Promotion scale: development and psychometric testing. *Public Health Nurs*. 2003;20(2):104-110. doi:10.1046/j.1525-1446.2003.20204.x

16. Chen MY, Lai LJ, Chen HC, Gaete J. Development and validation of the short-form Adolescent Health Promotion scale. *BMC Public Health*. 2014;14(1):1106. doi:10.1186/1471-2458-14-1106
17. Morgado FF, Meireles JF, Neves CM, Amaral A, Ferreira ME. Scale development: ten main limitations and recommendations to improve future research practices. *Psicol Reflex Crít*. 2017;30(3):1-20. doi:10.1186/s41155-016-0057-1
18. Kyriazos TA. Applied psychometrics: sample size and sample power considerations in factor analysis (EFA, CFA) and SEM in general. *Psychology*. 2018;09(08):2207-2230. doi:10.4236/psych.2018.98126
19. Tsang S, Royse C, Terkawi A. Guidelines for developing, translating, and validating a questionnaire in perioperative and pain medicine. *Saudi J Anaesth*. 2017;11(suppl 1):80. doi:10.4103/sja.SJA_203_17
20. Polit DF, Beck CT. *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. 9th ed. Lippincott Williams & Wilkins; 2012.
21. Lawshe CH. A quantitative approach to content validity. *Pers Psychol*. 1975;28(4):563-575.
22. Yusoff MSB. ABC of content validation and content validity index calculation. *Resource*. 2019;11(2):49-54. doi:10.21315/eimj2019.11.2.6
23. Orçan F. Exploratory and confirmatory factor analysis: which one to use first? *J Meas Eval Educ Psychol*. 2018;9(4):414-421. doi:10.21031/epod.394323
24. Connell J, Carlton J, Grundy A, et al. The importance of content and face validity in instrument development: lessons learnt from service users when developing the Recovering Quality of Life measure (ReQoL). *Qual Life Res*. 2018;27(7):1893-1902. doi:10.1007/s11136-018-1847-y
25. MacCallum RC, Widaman KF, Zhang S, Hong S. Sample size in factor analysis. *Psychol Methods*. 1999;4(1):84-99.
26. Jans-Beken L, Jacobs N, Janssens M, et al. Gratitude and health: an updated review. *J Posit Psychol*. 2019;15(6):743-782. doi:10.1080/17439760.2019.1651888
27. Diessner R, Lewis G. Further validation of the gratitude, resentment, and appreciation test (GRAT). *J Soc Psychol*. 2007;147(4):445-447. doi:10.3200/SCOP.147.4.445-448
28. Polit DF, Yang FM. *Measurement and the Measurement of Change*. Wolters Kluwer; 2016.
29. Aubi E, Shadnoush M, Nazarzadeh M, Bidel Z, Ranaei A, Delpisheh A. Translation and assessment of validity and reliability of the health-promoting lifestyle questionnaire, using factor analysis. *Pajoohandeh J*. 2012;17(3):114-120.
30. Rojas-Barahona CA, Gaete J, Olivares E, Förster CE, Chandia E, Chen MY. Psychometric evaluation of the Adolescent Health Promotion scale in Chile: differences by socioeconomic status and gender. *J Nurs Res*. 2017;25(6):471-480. doi:10.1097/JNR.0000000000000196
31. Swaminathan SS, Boratne AV, Patil R, Sankaran A. Health promoting behavior among school going adolescents in Puducherry—a cross-sectional study. *Indian J Community Health*. 2020;32(3):479-485. doi:10.47203/IJCH.2020.v32i03.004
32. Wang D, Ou CQ, Chen MY, Duan N. Health-promoting lifestyles of university students in Mainland China. *BMC Public Health*. 2009;9(1):379. doi:10.1186/1471-2458-9-379

How to cite this article: Sarkhani N, Pashaeypoor S, Negarandeh R, Ghafouryan Gomish Bashi N, Heshmatian ME. Validity and reliability of the Persian version of the Short-Form Adolescent Health Promotion scale: methodological study. *Health Sci Rep*. 2023;6:e1063. doi:10.1002/hsr2.1063